In the Claims:

Claims 1-6 are amended herein.

1. (currently amended) A method of resetting to zero azimuth automatically comprising the steps of:

collecting multiple samples with different azimuths in the longitudinal and latitudinal orientations using two orthogonal magnetic sensors, and outputting corresponding first and second sine wave signals ~~(Sx) (Sy)~~;

adjusting the amplitudes of one of the first and second sine wave signals ~~(Sx) (Sy)~~ such that the amplitudes of the first sine wave signals ~~(Sx)~~ and the amplitudes of the second sine wave signal ~~(Sy)~~ are equal;

comparing the sample values in each set respectively represented by the first and second sine wave signals ~~(Sx) (Sy)~~ to generate the maximum and minimum values ~~(Xmax, Xmin) (Ymax, Ymin)~~;

computing the average values ~~(Xbase, Ybase) basing~~ based on the maximum and minimum values ~~(Xmax, Xmin) (Ymax, Ymin),~~ of the first and second sine wave signals, repectively, and taking each of the average values ~~(Xbase, Ybase) as~~ to be the zero reference value of the first and second sine wave ~~signals (RSx, RSy) having reset to zero azimuth,~~ signals, respectively, to produce refererence first and second sine wave signals, whereby

the reference first and second sine wave signals ~~(RSx) (RSy)~~ have ~~the~~ positive and negative sides of ~~of~~ equal amplitude.

2. (currently amended) The method of resetting to zero azimuth as claimed in claim 1, wherein the first and second sine wave signals ~~(Sx) (Sy)~~ from the two magnetic sensors are 90 degrees out of phase with each other.

3. (currently amended) The method of resetting to zero azimuth as claimed in claim 1, wherein the method further comprises the steps of:

comparing the maximum value (Xmax) of the first sine wave signals and the maximum value (Ymax) of the second sine wave signals to yield a differential ratio R1 = ~~Xmas/Ymax~~ <u>Xmax/Ymax</u>; and

multiplying the second sine wave signals ~~(Sy)~~ by the differential ratio R1 such that the amplitudes of the first and second sine wave signals ~~(Sx, Sy)~~ become equal.

4. (currently amended) The method of resetting to zero azimuth as claimed in claim 1, wherein the method further comprises the steps of:

comparing the maximum value (Xmax) of the first sine wave signals and the maximum value (Ymax) of the second sine wave signal to yield a differential ratio R2 = ~~Ymas/Xmax~~ <u>Ymax/Xmax</u>; and

multiplying the first sine wave signals ~~(Sx)~~ by the differential ratio R2 such that the amplitudes of the first and second sine wave signals ~~(Sx,Sy)~~ become equal.

5. (currently amended) A method of measuring the azimuth ~~after having~~ with an azimuth meter, wherein the azimuth meter has been reset to zero azimuth as claimed in claim 3, comprising the steps of:

taking multiple samples respectively using two orthogonal magnetic sensors, and outputting corresponding first and second magnetic induction signals ~~(Ix, Iy)~~;

multiplying the second magnetic induction signals ~~(Iy)~~ by the a differential ratio R1, wherein the differential ratio R1 is generated by the steps of:

collecting multiple samples with different azimuths in the longitudinal and latitudinal orientations using two orthogonal magnetic sensors, and outputting first and second sine wave signals;

adjusting the amplitudes of one of the first and second sine wave signals such that the amplitudes of the first sine wave signals and the amplitudes of the second sine wave signal are equal;

comparing the sample values in each set respectively represented by the first and second sine wave signals to generate the maximum and minimum values;

computing the average values based on the maximum and minimum values of the first and second sine wave signals, respectively, and taking each of the average values to be the zero reference value of the first and second sine wave signals, respectively, to produce reference first and second sine wave signals; and

comparing the maximum value (Xmax) of the first sine wave signals and the maximum value (Ymax) of the second sine wave signals to yield a differential ratio R1 = ~~X/Ymax~~ Xmax/Ymax; and

comparing amplitudes of the first magnetic induction signals ~~(Ix)~~ with an adjusted amplitude of the reference first sine wave signals ~~(RSx)~~, and comparing amplitudes of the second magnetic induction signals ~~(Iy)~~ with an adjusted amplitude of the reference second sine wave signals ~~(RSy)~~, in order to generate the azimuth.

6. (currently amended) ~~The~~ A method of measuring the azimuth ~~as claimed in claim 5, wherein the method of measuring the azimuth further~~ with an azimuth meter wherein the azimuth meter has been reset to zero azimuth as claimed in claim 4, comprising the steps of:

taking multiple samples respectively using two orthogonal magnetic sensors; and outputting corresponding first and second magnetic induction signals ~~(Ix, Iy)~~ (Ix,Iy);

multiplying the first magnetic induction signals (Ix) by ~~the~~ a differential ratio R2, wherein the differential ratio R2 is generated by steps of:

collecting multiple samples with different azimuths in the longitudinal and latitudinal orientations using two orthogonal magnetic sensors, and outputting corresponding first and second sine wave signals;

adjusting the amplitudes of one of the first and second sine wave signals such that the amplitudes of the first sine wave signals and the amplitudes of the second sine wave signal are equal;

comparing the sample values in each set respectively represented by the first and second sine wave signals to generate the maximum and minimum values;

computing the average values based on the maximum and minimum values of the first and second sine wave signals, respectively, and taking each of the average values to be the zero reference value of the first and second signals to produce reference first and second sine wave signals; and

comparing the maximum value (Xmax) of the first sine wave signals and the maximum value (Ymax) of the second sine wave signal to yield a differential ratio R2 = ~~Y/Xmax~~ Ymax/Xmax; and

comparing the amplitudes of the first magnetic induction signals ~~(Ix)~~ with the adjusted amplitude of the reference first sine wave signals ~~(RSx)~~, and comparing the amplitudes of the

second magnetic induction signals ~~(Iy)~~ with the adjusted amplitude of the reference second sine wave signals ~~(RSy)~~, in order to generate the azimuth.